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PLANT PORTRAIT

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1158. *Silene cordifolia* All.

Caryophyllaceae

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Summary

Silene cordifolia is illustrated and discussed. It is a paleoendemic species growing in cliff cracks and boulders on granites and gneiss of the Maritime and Ligurian Alps (NW Italy). In this area the species is one of the main hosts of the Owlet Moth *Hadena clara* (Noctuide, Lepidoptera). A detailed description of *S. cordifolia* is provided, including notes on its cytology and habitat. Despite its narrow distribution and its occurrence in few habitats it has no particular threats, and its conservation status is Least Concern.

INTRODUCTION

Silene currently comprises 915 accepted species (POWO, 2025). The genus has a predominantly Northern Hemisphere distribution, but some species occur also in South America and Africa. *Silene cordifolia* was originally described in Italy by Carlo Allioni in *Flora Pedemontana*, where he also provided a drawing of it (Table XXIII f.3). He also referred to a watercolour in the *Iconographia Taurinensis* (volume XXV table 67). The specific name *cordifolia* concerns to the heart-shaped leaves characteristic of the species (Plate 1158). Similarly, the common names of the species both in France and in Italy make reference to the leaves shape: *Silène à feuilles en coeur* and *Silene a foglie cuoriformi*, respectively.

Silene cordifolia is the only species of *S.* sect. *Cordifoliae* that occurs in the Alps (Chowdhuri, 1957). The other species within this section (*S. acutifolia* Link ex Rohrb. and *S. foetida* Link ex Spreng.) occur in the Iberian Peninsula. For this reason, an early divergence between *S. cordifolia* and the other species was proposed by Martini (1984). More recently, Jafari (2025) suggested transferring the Iberian species to a new section, because S. *cordifolia* differs in several morphological features, such as cordate-ovate cauline leaves, bifid petal limbs and a non-auriculate claw. Molecular data support a divergence in the early Miocene between *S. cordifolia* and the other species of the subgenus *Behenantha* (Sloan et al., 2009; Jafari et al., 2020). In line with the ancient divergence of the species, the phylogeographical pattern

FIGURE 1 Representative photo illustrating the ecology and morphology of *Silene cordifolia*. Photograph Gabriele Casazza.

of *S. cordifolia* suggests that the separation of its major lineages predates the Last Glacial Maximum and the following repeated glacial and interglacial periods probably drove further differentiation. Moreover, it was recorded that for both populations and genotypes extinction was minimal during the Last Glacial Maximum, likely due to the relatively low impact of glaciations and to the topographic complexity of the Maritime Alps (Casazza et al., 2016). The species, together with *S. vallesia* L., is the only host of the Owlet Moth *Hadena clara* (Staudinger, 1901) in the Southwestern Alps. *Hadena clara* belongs to the family Noctuidae (Wagner, 2012) occurring in southern Europe, North Africa, the Caucasus region and Iran. *Hadena* moths are frequently the most common pollinators of the plant, even if they may have negative effects due to larval predation (Kephart et al., 2006; Prieto-Benítez et al., 2017) The presence of *S. cordifolia* likely contributes to the high abundance of *H. clara* in the Maritime Alps.

Silene cordifolia is a diagnostic species of the alliance *Saxifragion pedemontanae* (Barbero & Bono 1967), referable to the habitat 8220 EUNIS and the habitat 62.2 CORINE Biotopes. Additionally, Lacoste (1975) used the species to characterize the *Silenetum cordifoliae*, an association growing on siliceous rocks in the high Tinée Valley (Figure 1).

CULTIVATION

Seeds need cold pre-treatment to germinate. The optimal temperature for seed germination is 15°C. Germination is light insensitive (Carasso et al., 2020). It is not clear that it has ever been cultivated in northern Europe. If attempted, it should be grown in free-draining conditions in full sun.

PLATE 1158 *Silene cordifolia*

ALESSANDRO INFUSO

NOMENCLATURE AND DESCRIPTION

Silene cordifolia L., Fl. Pedem. 2: 82 (1785). Lectotype designated by Bocquet in Dal Vesco 1986: 92.

Homotypic synonym:

Elisanthe cordifolia (All.) Lazkov in Bot. Zhurn. (Moscow & Leningrad) 95: 1485 (2010).

A long-lived *perennial herb* with stem up to 20 cm, forming a multi-stemmed bushy plant, entirely glandular-pubescent.. *Leaves* basal ovate, cauline cordate-ovate, acuminate and partially amplexicaul. *Inflorescence* with 1–4 flowers. *Calyx* 12–15 mm, glandular-pubescent, inflated, with linear-lanceolate, acuminate teeth. *Petals* white or pink, bifid. *Capsule* 8–10 mm oblong, twice as long as the glabrous carpophore. Seeds have an echinate cell surface (Hoseini et al., 2017). Figure 2.

CYTOLOGY. Chromosome number reported for an individual growing in the Botanical Garden of Geneva is $2n = 24$ (Löve & Solbrig, 1964), as are most *Silene* species (Frajman et al., 2018; Petri & Oxelman, 2011).

PHENOLOGY. June to August.

DISTRIBUTION. The species mainly occurs in the Argentera-Mercantour massif at the border between Italy and France (Casazza et al., 2008). The distribution area extends north to the Puriac Valley (southeast to the Maddalena pass), west to the Torrent de Tortisse valley, west to the mountains near the Tenda pass and south to near Roquebillière in the Vesuibie valley. Recently, the species was recorded on the left side of the Stura di Demonte Valley, in the Cottian Alps (Selvaggi et al., 2018), confirming the two Casati herbarium specimens preserved in the Turin Herbarium with the indication "from the Cottian Alps" (Martini, 1984).

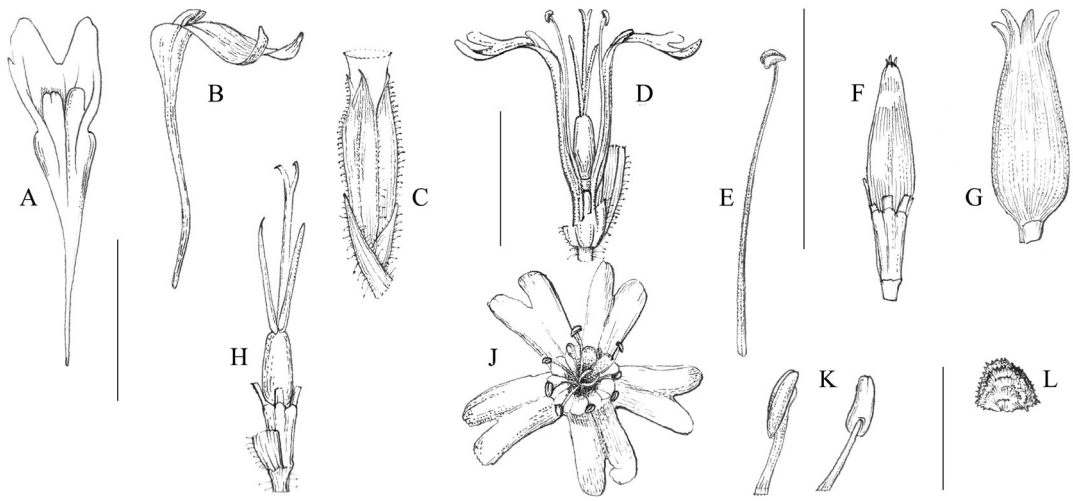

FIGURE 2 *Silene cordifolia*. A, upper surface of petal; B, lateral view of petal; C, calyx; D, longitudinal view of a partially dissected flower; E, stamen; F, mature ovary; G, capsule; H, immature ovary with style; J, flower; K, anther; L, seed. Scale bars A, B, C, D, E, F, H, J, 1 cm; K, L, 2 mm. Drawn by Alessandro Infuso.

HABITAT. The species grows in cliff cracks and boulders, on granites and gneiss substrates from 1200 to 2200 m.

CONSERVATION. *Silene cordifolia* is listed as Least Concern both in France (UICN France, FCBN, AFB & MNHN, 2018) and Italian (Rossi et al., 2020) Red List. The species has no particular threats, however it may be negatively affected by future climate change (Dagnino et al., 2020).

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